



A.D. 1803 N^o 2746.

S P E C I F I C A T I O N

OF

ROBERT CROSS

AND

THOMAS SOUTHWORTH.

BOILERS, FURNACES, FLUES, &c.

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A.D. 1803 N° 2746.

Boilers, Furnaces, Flues, &c.

CROSS AND SOUTHWORTH'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, ROBERT CROSS, of Quaker's Brook within Hoghton, in the County County of Lancaster, Tanner, and THOMAS SOUTHWORTH, of Hoghton aforesaid, Cotton Manufacturer, send greeting.

5 WHEREAS His present Majesty King George the Third, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Thirty-first day of December now last past, hath given and granted unto us, the said Robert Cross and Thomas Southworth, our executors, administrators, and assigns, special licence, full power, sole privilege and authority, to
10 make, use, exercise, and vend within that part of the United Kingdom of Great Britain and Ireland called England, the Dominion of Wales, and the Town of Berwick upon Tweed, during the term of fourteen years therein mentioned, our Invention of "A MODE OF HEATING SUCH PANS, VATS, CISTERNS, AND OTHER VESSELS AS ARE REQUIRED TO BE HEATED BY FIRE AND USED FOR WORKING
15 STEAM ENGINES, AND IN THE BUSINESS OF A CALICO PRINTER, DYER, BREWER, PAPER MAKER, BLEACHER, SALT MAKER, TANNER, AND OTHER SUCH LIKE TRADES, BY WHICH INVENTION MUCH EXPENCE WILL BE SAVED NOT ONLY IN THE FUEL TO BE USED IN THE HEATING SUCH VESSELS, BUT ALSO IN THE CONSTRUCTING THE VESSELS THEMSELVES;" which Letters Patent contain a proviso requiring the said Robert Cross and
20 Thomas Southworth, by an instrument in writing under our hands and seals, or under the hand and seal of one of us, to describe and ascertain the nature of our said Invention, and in what manner the same is to be performed, and

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cause the same to be inrolled in His Majesty's High Court of Chancery within one calendar month next and immediately after the date of the said recited Letters Patent, as in and by the same, relation being thereunto had, may more fully and at large appear.

NOW KNOW YE, that we, the said Robert Cross and Thomas Southworth, 5 in compliance with the said proviso, do hereby declare that the nature of our said Invention, and the manner in which the same is to be performed, is particularly described as follows, that is to say :—

That instead of applying the fire to these boilers, &c., as heretofore in general use, under the boiler, and the flues being on the outside, the fire is to be put 10 into the furnace in the inside of the boiler, and the flues also, which flues may be carried once, twice, thrice, or more times round the inside of the boiler, and surrounded with water, by which means a much greater surface of water is applied to the fire, and much expence will be saved in the fuel, as also in the erection of the boilers, particularly where used by dyers, printers, brewers, and 15 others using coppers. The boilers may be made of wood, stone, brick, cast or wrought iron, or any other material waterproof, as may best serve the interest of the person using the same, and less injury will be done to a vessel itself by this mode of use than the general one by reason of the fire passing through the cast or wrought iron furnace and flues. Soot and light ashes will of course 20 accumulate within the furnace and flues; but in order to clear away such obstructions a cistern must be fixed above the boiler to hold as much water as to fill the boiler when cleaned, &c., and the water must be admitted into the chimney and flues by a valve or inlet fixed in the cistern, which is shewn in the annexed Plans or Drawings, and explained by the references to the said 25 Plans or Drawings hereafter mentioned. References to the annexed Plans or Drawings :—Figure 1st, *a, a, a, a*, the boiler or cistern, made of cast or wrought iron, or any other waterproof material; *b*, the furnace, made of cast or wrought iron, in which the fire is contained, the fuel being admitted through the hopper or furnace mouth at *c*; *d, d, d*, the flues or pipes through which 30 the flame passes one, two, three, or more times round the inside of the boiler, all being surrounded with water up to the dotted lines above the pipes at *e*. The flues may be made of cast or wrought iron. *f*, the chimney pipe, made of cast iron, brick, or stone; *g*, a frame of timber or foundation of stone or brick, on which the cast iron pillars *h, h*, are fixed (brick or stone will answer the 35 same purpose); *i*, the quadrant pinion, &c., for the purpose of letting out the fire, or setting the grate bars to any angle at pleasure; *j*, a copper buoy, floating on the surface of the water in the boiler, which, when the boiler wants water, opens a valve in the cistern *k*, to feed the boiler through the pipe *l*;

THE PATENT OFFICE, 25, ABINGDON STREET, LONDON, W.C.

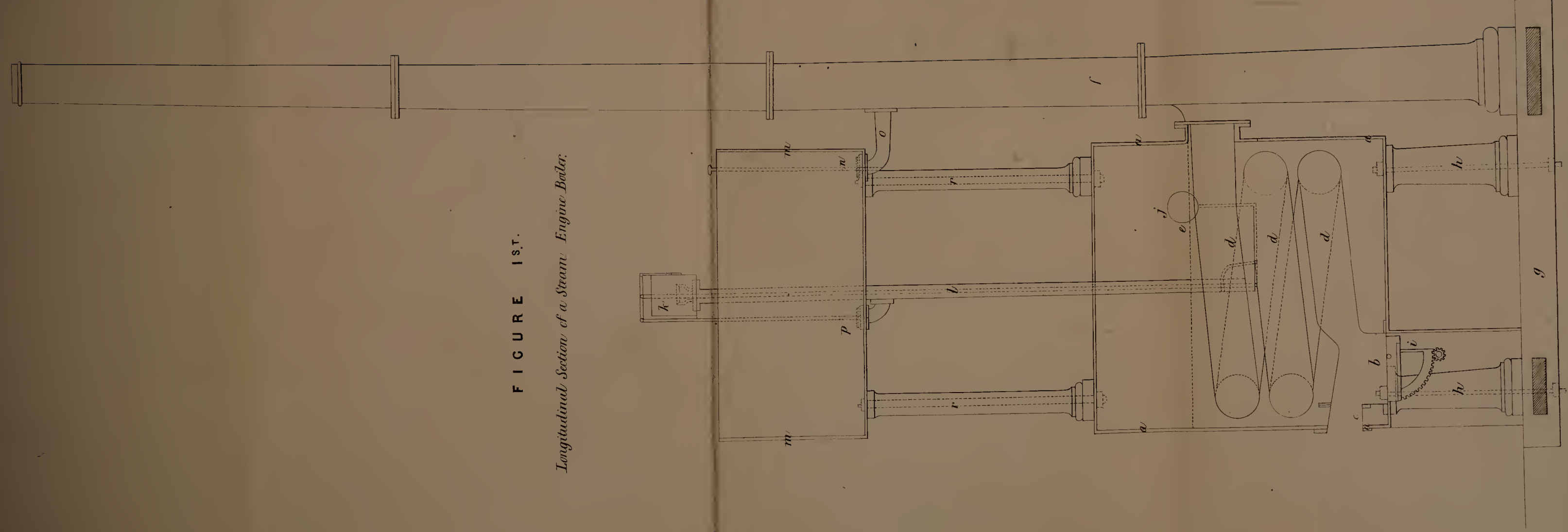
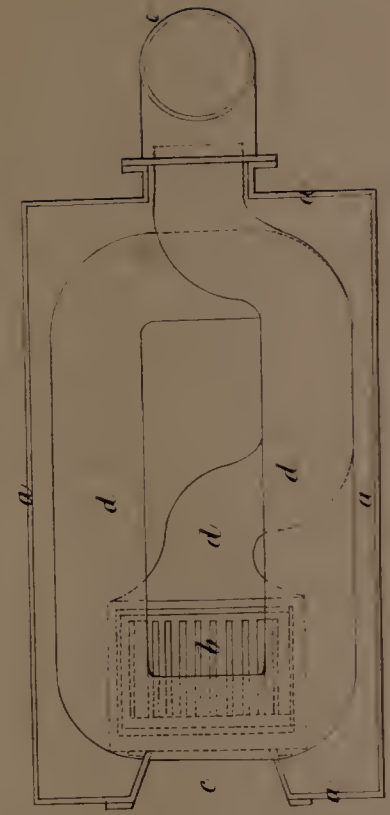


FIGURE 1ST.
Longitudinal Section of a Steam Engine Boiler.

FIGURE 2ND.
Ground Plan of Steam Engine Boiler.



SCALE, HALF AN INCH TO ONE FOOT.

The enstled drawing is colored.

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Maitry & Sons Ltd.

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FIGURE 3RD.
Cross Section of Steam Engine Boiler

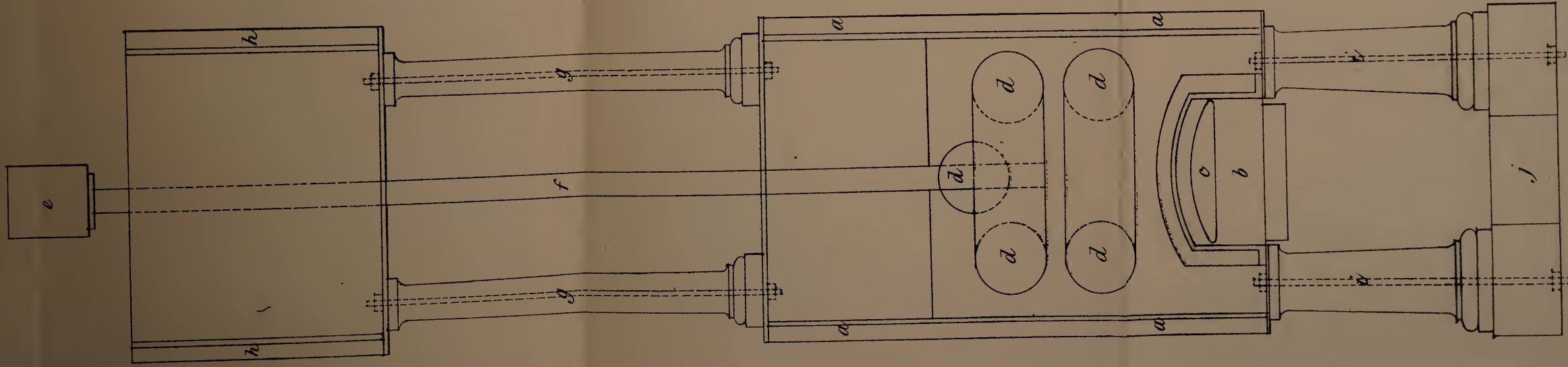


FIGURE 4TH.
*Side View of the Furnace
and Flues for the use of Printers*

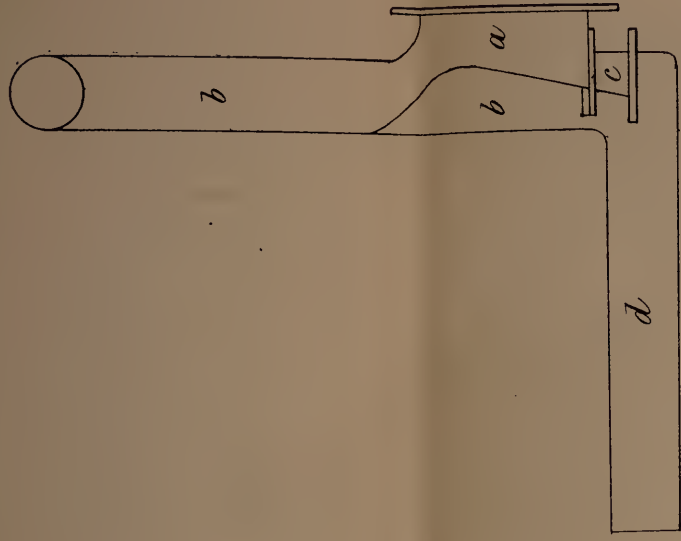
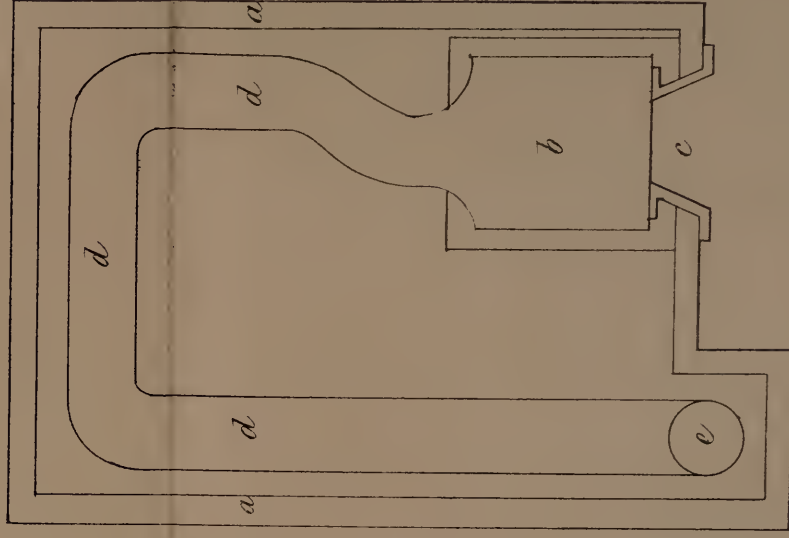


FIGURE 5TH.
Ground Plan of the above.



The enrolled drawing is colored.

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m, m, a large cistern to hold water for the purpose of cleaning the flues, admitting the water by a valve *n*, through the pipe *o*; *p*, a valve intended to supply the boiler with water in case the source should fail to supply the cistern *k*, admitted through a pipe *q*, by means of a valve which is raised by the said
 5 buoy *j*. (This is to prevent the flues or pipes from receiving damage for want of water.) *r, r*, the pillars to supply the water cistern *m, m*, supplied by the overflow from the cistern *k*. Figure 2^d, ground plan of steam engine boiler: *a, a, a, a*, the boiler or cistern containing water and steam; *b*, the furnace or stove to hold the fire; *c*, the hopper or furnace mouth to admit the fire;
 10 *d, d, d*, the flues or pipes through which the flame passes; *e*, the chimney, made of cast brick or stone. Figure 3^d, end view of a steam engine boiler: *a, a, a, a*, the end of boiler or cistern; *b*, the end of furnace or stove; *c*, the entrance out of the furnace into the flues; *d, d, d, d, d*, the end of flues or pipes to admit the flame; *e*, the feed cistern to receive the water to supply the
 15 boiler; *f*, the feed pipe through which the water is admitted into the boiler. *g, g*, the pillars to support the water cistern to clean the flues; *h, h*, the water cistern; *i, i*, the pillars to support the boiler, &c.; *j*, the the frame of timber or foundation to receive the pillars. Figure 4th, a side view of the furnace flues for the use of printers, dyers, and others using coppers: *A*, the furnace or
 20 stove to hold the fire; *b, b*, the flues and pipes to admit the flame; *c*, the hopper or furnace mouth to admit the fuel; *d*, the chimney coming up one corner of the cistern or boiler. Figure 5th, the ground plan of cistern, boiler, furnace, flues, &c. for printers, &c.: *a, a*, the boiler or cistern to hold the water, &c.; *b*, the furnace or stove to receive the fire; *c*, the hopper or furnace
 25 mouth to admit the fuel; *d, d, d*, the flues or pipes to admit the flame; *e*, the chimney.

In witness whereof, we, the said Robert Cross and Thomas Southworth, have hereunto set our hands and seals, this Twenty-first day of January, in the forty-fourth year of the reign of His Majesty King George the
 30 Third, and in the year of our Lord One thousand eight hundred and four.

ROBT (L.S.) CROSS.

THOMAS (L.S.) SOUTHWORTH.

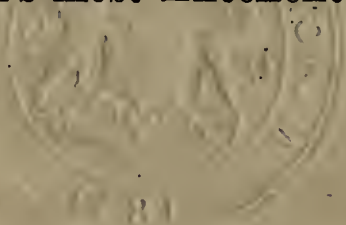
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AND BE IT REMEMBERED, that on the same Twenty-first day of January, in the year above mentioned, the aforesaid Robert Cross and Thomas Southworth came before our Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and everything therein contained, in form above written. . And also the Specification aforesaid was stamped according to the 5 tenor of the Statute in that case made and provided.

Inrolled the Twenty-fourth day of January, in the year above written.

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1854.



5

RICH^d PALMER, a Master Extraordinary in Chancery.